

### REMARKS

In the Office Action, claims 1-53 were pending. Claims 40-52 were withdrawn, and claims 1-39 and 53 were rejected. Claims 1 and 36-39 have been amended to more positively recite the novel features of the present invention. Claims 54-57 have been added to the application, and claim 53 has been canceled. The amendments above do not contain new matter. The subject matter of the amendments is contained at paragraph 0013 of the application and the originally filed claims, among other places. The Applicants respectfully request admission of amended claims 1 and 36-39, and new claims 54-57.

#### I. Restriction Requirement

In the Office Action at page 2, number 1, the Examiner restricted the present application to Group I (claims 1-39 and 53 classified in class 428, subclass 432) or Group II (claims 40-52 classified in class 427, subclass 248.1). During a telephone conversation with Andrew Siminerio on June 25, 2003, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-39 and 53. The Applicants affirm the election of Group I, claims 1-39 made during the telephone conversation on June 25, 2003.

#### II. Rejection under 35 U.S.C. § 112

In the Office Action at page 3, number 7, claims 2-4 were rejected under 35 U.S.C. § 112, second paragraph as being indefinite because the claims recite the limitation "UVA340". The Examiner incorrectly classified UVA340 as a trademarked product.

A "trademark" is a name, symbol, or other device identifying a product, officially registered and legally restricted to the use of the owner or manufacturer. UVA340 is not such a term; its use is not legally restricted by an owner. UVA340 radiation is produced by a UVA340 lamp which is a commercially available radiation source that is the best available simulation of sun light in the critical, short wavelength UV region between 365 nm and the

solar cut-off of 295 nm. A UVA340 lamp has a peak emission at 340 nm. Because UVA340 is not a trademark, the rejection of claims 2-4 under 35 U.S.C. § 112, second paragraph is not proper and it is respectfully requested that the rejection be withdrawn.

III. Rejection under 35 U.S.C. §102

A. Rejection of Claims 1-13, 17-34, and 53

In the Office Action at page 4, number 9, claims 1-13, 17-34, and 53 were rejected under 35 U.S.C. §102(a) as being anticipated by US Patent No. 6,103,363 ("Boire").

1. The Invention

An embodiment of the present invention as recited in claim 1, as amended, is an article comprising a substrate having at least one surface; and a photo-induced hydrophilic coating deposited over at least a portion of the at least one surface, wherein an outer surface of the photo-induced hydrophilic coating has a root mean square roughness of less than 2 nm; and wherein the photo-induced hydrophilic coating is deposited by a process selected from chemical vapor deposition, magnetron sputtered vacuum deposition, and spray pyrolysis.

2. The Boire Reference

The Boire reference discloses a coated substrate, which is a glass, ceramic or vitro-ceramic substrate, provided on at least a portion of one of its faces with a coating having photocatalytic properties, and comprising titanium oxide at least partly crystallized in the anatase form. The reference teaches and discloses titanium oxide based coatings that exhibit a roughness of 2 to 20 nm. See col. 4, lines 56-58 of Boire.

3. Traversal of the Rejection

To anticipate a claim, a single source must contain all of the elements of the claim. See Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1379, 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986).

In this case, the present invention as defined in amended claim 1 is an article comprising a photo-induced hydrophilic coating deposited over

at least a portion of the at least one surface, wherein an outer surface of the photo-induced hydrophilic coating has a root mean square roughness of less than 2 nm. In contrast to the present invention, the Boire reference teaches TiO<sub>2</sub> based coatings that exhibit a roughness of 2 to 20 nm. The Boire reference does not teach the article of the invention comprising a photo-induced hydrophilic coating with an outer surface having a root mean square roughness of less than 2 nm.

Because Boire does not disclose each and every limitation of the present invention, Boire cannot anticipate the invention as recited in claim 1. As a result, it is submitted that the rejection of claim 1 is improper and it is respectfully requested that the rejection be withdrawn.

Claims 2-13 and 17-34, which directly or indirectly depend from claim 1, recite the present invention in varying scope. Applicants have discussed earlier how amended claim 1 is not anticipated by Boire and is similarly not anticipated by the reference of record.

In conclusion, the rejection of claims 1-13, 17-34, and 53 under 35 U.S.C. §102(a) as being anticipated by Boire is improper and should be withdrawn.

#### B. Rejection of Claims 36-39

In the Office Action at page 6, number 10, claims 36-39 were rejected under 35 U.S.C. §102(e) as being anticipated by US Patent No. 6,238,738 ("McCurdy").

##### 1. The McCurdy Reference

The McCurdy reference discloses a chemical deposition process for depositing a titanium oxide coating on a glass substrate comprising: (a) pre-mixing a uniform, precursor gas mixture containing titanium tetrachloride and an ester; (b) delivering said precursor gas mixture at a temperature below the thermal decomposition temperature of said ester to a location near a glass substrate to be coated, and (c) introducing said precursor gas mixture into a vapor space above said glass substrate.

## 2. Traversal of the Rejection

To anticipate a claim, a single source must contain all of the elements of the claim. See Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1379, 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986).

Amended claim 36 recites an article comprising a float glass ribbon having at least one surface; and a photo-induced hydrophilic coating deposited directly on at least a portion of the at least one surface, wherein the photo-induced hydrophilic coating is deposited directly on the float glass ribbon in a molten metal bath and the outer surface of the photo-induced hydrophilic coating has a root mean square roughness of less than 2 nm.

Amended claim 37 recites an article comprising a substrate having at least one surface; and a photo-induced hydrophilic coating deposited over at least a portion of the at least one surface, wherein the photo-induced hydrophilic coating has a photocatalytic activity of less than or equal to  $3 \times 10^{-3} \text{ cm}^{-1} \text{ min}^{-1}$  and the outer surface of the photo-induced hydrophilic coating has a root mean square roughness of less than 2 nm.

Amended claim 38 recites an article comprising a substrate having at least one surface; a photo-induced hydrophilic coating deposited over at least a portion of the at least one surface, wherein the substrate is a float glass ribbon located in a molten metal bath, wherein the photo-induced hydrophilic coating has a thickness of 500 Å or less, and wherein the photo-induced hydrophilic coating is deposited over the at least one surface in a molten metal bath by chemical vapor deposition and the outer surface of the photo-induced hydrophilic coating has a root mean square roughness of less than 2 nm.

Amended claim 39 recites an article comprising a substrate having at least one surface; and a photo-induced hydrophilic coating deposited over at least a portion of the at least one surface, wherein the photo-induced hydrophilic coating is deposited by chemical vapor deposition at a temperature in the range of 500°C to 1200°C, and wherein the photo-induced hydrophilic coating has a thickness of 500 Å or less and the outer

surface of the photo-induced hydrophilic coating has a root mean square roughness of less than 2 nm.

In regard to the present invention as defined by amended claim 36, the McCurdy reference does not teach or disclose a coated article having photo-induced hydrophilic coating comprised of titanium dioxide. Furthermore, McCurdy does not teach or disclose a photo-induced hydrophilic coating with an outer surface having a surface roughness of less than 2 nm.

In regard to the present invention as defined by amended claim 37, the McCurdy reference does not teach or disclose a coated article having photo-induced hydrophilic coating comprised of titanium dioxide. Furthermore, McCurdy does not teach or disclose a photo-induced hydrophilic coating with an outer surface having a surface roughness of less than 2 nm and a photocatalytic activity of less than or equal to  $3 \times 10^{-3} \text{ cm}^{-1} \text{ min}^{-1}$ .

In regard to the present invention as defined by amended claim 38, the McCurdy reference does not teach or disclose a coated article having photo-induced hydrophilic coating comprised of titanium dioxide. Furthermore, McCurdy does not teach or disclose a photo-induced hydrophilic coating having a thickness of 500 Å or less and an outer surface having a surface roughness of less than 2 nm.

In regard to the present invention as defined by amended claim 39, the McCurdy reference does not teach or disclose a coated article having photo-induced hydrophilic coating comprised of titanium dioxide. Furthermore, McCurdy does not teach or disclose a photo-induced hydrophilic coating that is deposited by chemical vapor deposition at a temperature in the range of 500°C to 1200°C and has a thickness of 500 Å or less and an outer surface having a surface roughness of less than 2 nm.

Because each embodiment of the invention described by independent claims 36-39 recites at least one limitation that is not taught or disclosed by McCurdy, McCurdy does not teach or disclose each and every limitation in independent claims 36-39 and therefore cannot anticipate these

claims. As a result, it is submitted that the rejection of claims 36-39 is improper and it is respectfully requested that the rejection be withdrawn. Claims 36-39 are not anticipated by McCurdy and should be in condition for allowance.

IV. Rejection under 35 U.S.C. § 103

In the Office Action at page 7, number 13, claims 1-35 and 53 were rejected under 35 U.S.C. §103(a) as being unpatentable over US Patent No. 5,897,958 ("Yamada") in view of US Patent No. 4,193,236 ("Mazzoni") and further in view of Boire.

A. The Yamada Reference

The Yamada reference teaches and discloses a photocatalyst composition-forming agent comprising a titanium oxide sol in combination with at least one compound from which a metal oxide.

B. The Mazzoni Reference

The Mazzoni reference teaches and discloses a method for making a multiple glazed unit comprising the steps of mounting a spacer between a pair of panes to provide an airspace; selecting an adhesive having a shear property of greater than about 40 pounds per square inch to prevent spacer displacement; securing the panes and spacer together with at least one cleat of the adhesive of said selecting step to prevent spacer displacement; and sealing the panes and spacer with a sealant.

C. Traversal of the Rejection

To establish a prima facie case, the PTO must satisfy three requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. See In re Fine, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. See Amgen, Inc. v. Chugai Pharm. Co., 927 F.2d 1200,

1209, 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991). Lastly, the prior art reference or combination of references must teach or suggest all the limitations of the claims. See In re Wilson, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

In this case, the present invention as defined in amended claim 1 is an article comprising a photo-induced hydrophilic coating deposited over at least a portion of the at least one surface, wherein an outer surface of the photo-induced hydrophilic coating has a root mean square roughness of less than 2 nm. In contrast to the present invention, there is no teaching or disclosure in Yamada, considered individually or in combination with Mazzoni and Boire, of an article having a photo-induced coating with an outer surface having a roughness of less than 2 nm. The Boire reference is the only cited reference that discusses surface roughness, and it teaches TiO<sub>2</sub> based coatings that exhibit a roughness of 2 to 20 nm.

Because the combination of Yamada, Mazzoni, and Boire does not teach or suggest all the limitations of the claims, it is submitted that the rejection of claim 1 is improper and it is respectfully submitted that the rejection be withdrawn. Claim 1 is patentably distinguishable over the cited references and should be in condition for allowance.

Because claim 1 is patentably distinguishable over the cited references, claims 2-35, which depend directly or indirectly on claim 1, are similarly patentably distinguishable and should be in condition for allowance.

In conclusion, the rejection of rejection of claims 1-35 under 35 U.S.C. § 103(a) as being unpatentable over Yamada in view of Mazzoni and further in view of Boire is improper and should be withdrawn.

#### V. New Claims

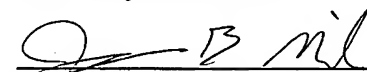
New claims 54-57 have been added via amendment. New claims are patentably distinguishable over cited references for the reasons stated above. The Applicants respectfully request consideration and allowance of the new claims.

## **CONCLUSION**

In light of the amendments and remarks presented in this correspondence, it is respectfully submitted that the following rejections are improper and should be withdrawn: the rejection of claims 2-4 under 35 U.S.C. §112, second paragraph; the rejection of claims 1-13 and 17-34 under 35 U.S.C. §102(a) as being anticipated by Boire; the rejection of claims 36-39 under 35 U.S.C. §102(e) as being anticipated by McCurdy; and the rejection of claims 1-35 under 35 U.S.C. §103(a) as being unpatentable over Yamada in view of Mazzoni further in view of Boire. Claims 1-39 should be in condition for allowance. If any questions remain about this application, please call me.

Respectfully submitted,

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